CONSERVATION

WIND POWER GENERATION

LEAD ACTIVITY
Naval Facilities Engineering Service Center (NFESC)

STATUS
Active

MISSION
Reduce fuel consumption and air emissions through the use of wind turbines

REQUIREMENT
Executive Order 12902 mandates that federal agencies implement renewable energy programs where practical. Many traditional methods of power generation use nonrenewable resources and produce pollutants. Methods for producing clean power using renewable resources are required to reduce pollution.

DESCRIPTION
Three 225-kilowatt (kw) Micon wind turbines now produce about 17 percent of the electricity at the Naval Auxiliary Landing Field (NALF) San Clemente Island (SCI), California. The power produced by these 100-foot high towers is generated quietly and transferred directly into SCI's power grid, supplementing the power already produced by the SCI generators, which are kept on-line at all times. SCI has two 750-kw and two 1200-kw generators. The wind power has not completely replaced generator power, but with the addition of the wind turbines, the 750-kw generators are used more often than the 1200-kw generators, using less fuel, and producing less emissions. The wind farm will result in annual energy savings of $112,000 per year and reduce diesel power nitrogen oxide (NO_x) emissions by about 14 tons annually.

The wind farm was funded through a partnership between the NFESC and the Department of Energy's National Renewable Energy Laboratory (NREL), and the Strategic Environmental Research & Development Program (SERDP). Pacific Industrial Electric installed and maintains the turbines. Installation took 6 months to complete, because SCI is located 52 miles offshore from San Diego. Careful consideration was given to impact of the turbines on the island's sensitive environmental receptors. The Navy worked closely with the U.S. Fish and Wildlife Service to prevent disturbing the federally listed threatened species, the island night lizard. A solicitation to procure an additional wind turbine unit was recently released.
http://www.nawcwpns.navy.mil/~weather/mugu/mesodata/analysis.html

NFESC proposed a follow-up seawater desalination project using the environmentally-friendly wind turbines. Currently, nearly 14.5 million gallons of fresh water per year are barged from San Diego to SCI. With this project, using two additional wind turbines and a desalination plant, SCI would no longer be dependent on fresh water shipments from the mainland. Potential annual savings could be almost $478,000 per year, and the number of trips made by diesel-powered tugs would be reduced.

BENEFITS

- Reduces air emissions
- Reduces fuel consumption for power generation
- Generates clean power; no pollutants are produced
- Costs less than diesel-electric power

ACCOMPLISHMENTS/CURRENT STATUS

Date	Activity
JUL 1997	Installation of two wind turbines began at SCI
JAN 1998	Wind turbine installation at SCI completed
OCT 1999	Installation of one additional wind turbine completed
2001	Evaluate potential for building a desalination plant to use in conjunction with wind turbines

FUTURE PLAN OF ACTION & MILESTONES

Date	Activity
Continuing	Evaluate potential for other wind power projects

COLLABORATION/TECHNOLOGY TRANSFER

Through a partnership, SERDP, NFESC and NREL brought the wind farm to SCI.

BIBLIOGRAPHY

- NFESC Press Release 98-5, Green Energy on Navy Island, March 1998.

RELATED GOVERNMENT INTERNET SITES

San Clemente Island Renewable Energy Success Story
Real-time Analysis of Southern California Coastal Surface Winds
DOE Wind Energy Program
NREL National Wind Technology Center

RELATED NAVY GUIDEBOOK REQUIREMENTS

Not applicable

UPDATED: 01/23/02